has been rendered by Dr. Huth in bringing together in one monograph[9] a concise account of the plants having fruit with hooked or barbed prickles or spines. He makes five classes: (a) those in which the roughness also assists the plant in climbing during growth, as the bedstraws; (b) those from which the seeds are projected, as the Martynia and other common kinds in which this property is not always noticed; (c) the rare anchor burs, *e. g.* Trapa natans; (d) the boring fruits, such as Stipa, Erodium and other grasses; and (e) clinging burs, like the stick-tights. Most of the space is devoted to a brief systematic account of all bur-producing plants, 163 genera being mentioned.

NOTES AND NEWS.

"SOME COMMON THISTLES" is the title of an illustrated paper by Prof. L. H. Pammel in *Colman's Rural World* (March 9).

PROFESSOR J. C. LYFORD is giving a course of illustrated botanical lectures before the Worcester (Mass.) Natural History Society.

DR. CHRISTIAN LUERSSEN has been called from the Forest school at Eberswald to be professor of botany and director of the botanic garden at Königsberg.

THE METHOD of bleaching, staining and mounting the unsectioned leaves and sporangia of ferns is described by the careful preparateur, Rev. J. D. King, in the *Microscope* for March.

PROFESSOR BAYLEY BALFOUR has been elected to the chair of botany in Edinburgh University, made vacant by the death of Dr. Dickson. This leaves a vacancy in the botanical department at Oxford.

DR. GRAY'S last writing appears in the *American Journal of Science* for March, being the Botanical Necrology for 1887. The list contains the names of W. E. Tolmie, John Goldie (both of whom died in 1886), Albert Kellogg, William Boott, Ezra Michener, and H. W. Ravenel.

DR. GEORGE L. GOODALE has in the past two months delivered a course of twelve lectures, at the Lowell Institute in Boston, on "Forests and Forest Products." A printed syllabus of each lecture was distributed to the audience. Judging from these synopses and Dr. Goodale's great attractiveness as a lecturer, the course must have been exceedingly interesting.

A PRESUMPTUOUS and unblushingly egotistical article on the germ of the southern cattle plague is given in the March *Microscope* over the signature of Dr. F. K. Billings, "director of the patho-biological laboratory of the State University of Nebraska," laying claim to all honors worth a straw in the study of this subject. If this is the manner in which "the sun of original investigation seems to be rising in the west," we hope for the credit of American science that its rays may be kept under a bushel as much as possible.

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[9] HUTH, DR. ERNST.—Die Kletipflanzen mit besonderer Berücksichtigung ihrer Verbreitung durch Thiere. (Bibliotheca botanica, Heft 9.) 36 pp., 78 wood-cuts, 4°. Cassel: Theodor Fischer, 1887.—4 marks.

THE DANGER of laying too much stress upon spore measurements, particularly in the Agaricini, is dwelt upon by Dr. M. C. Cooke in a somewhat caustic article in *Grevillea* for March. The variability of the spores of the same species, and the considerable difficulty of making accurate measurements, suggest the necessity of giving authority for the same when such data are added to descriptions originally published without them.

DR. J. BRUNCHORST[1] has carefully investigated the potato disease known as "scab," and finds it produced by a Myxomycete, for which he proposes the name Spongospora Solani. The plasmodium he found in the cork-cambium cells, which brings about the hypertrophy of these cells, resulting in the formation of the swellings. These pustules subsequently dry up and crack or become hollowed out, forming the scab-like markings.

IN THE *Revue Bryologique*, 1888, p. 2, A. L. Gronval criticises sharply some of the conclusions of Venturi as to the species of Orthotrichum which he elaborated for Husnot's *Muscologia Gallica*. M. Venturi is inclined to reduce the number of species by combining the described forms, a process which does not coincide wholly with M. Gronval's views. As many of our American species are treated, the paper is worthy the attention of our bryologists.

PNEUMATODES is the name of certain root organs studied by Ludwig Jost, found chiefly on certain palms, and discovered to be of use in the aëration of the plant. They are outgrowths from the root, point upward into the air, and are characterized by having a swollen portion different from the rest. Dr. Goodale (*Am. Jour. Sci.*, March, 1888), in commenting on Jost's communication (*Bot. Zeit.*, Sept., 1887), refers the "cypress-knees" to this new class of organs.

THE OFFICE of the seed tuber in the potato plant is treated from experimental evidence by E. S. Goff in *Agricultural Science* for February. His conclusions are that the plant takes up nearly or quite all the available food from the tuber before the latter decays, that such nutriment is better suited to the needs of the young plant than nutriment from the soil, and that the rapidity with which the transfer is made depends upon outside conditions, such, especially, as the condition of the soil.

REV. THOS. MORONG continues his studies in the Typhaceæ in *Bull. Torr. Bot. Club* (March) by presenting our six species of Sparganium. They are *S. eurycarpum* Eng., *S Greenei* Morong (a new California species), *S. androcladum* Morong (*S. simplex*, var. *androcladum* Eng.) and var. *fluctuans* Morong (*S. simplex*, var. *fluitans* Eng.), *S. simplex* Huds. and vars. *multipedunculata* Morong (a new Montana form) and *angustifolium* Eng., *S. minimum* Bauhin, and *S. hyperboreum* Læst. (from Hudson Bay and Labrador).

PROFESSOR LUNDSTRÖM, of Upsala, has discovered that Melampyrum leaves secrete nectar for the purpose of attracting ants, who in turn carry the seeds of the plant in their mouths down to the ground, as they resemble ant cocoons. So complete is this mimicry that seeds strewed upon the ground were found to be carefully saved by the ants as if they were cocoons. The thin membrane investing the seed, and giving it its cocoon-like appearance, falls off soon after it reaches the ground, after which it remains undisturbed by the ants.

[1] Abstract in *Bot. Centralblatt*, xxxiii, 209.

REV. THOMAS MORONG is going to visit South America, mainly under the auspices of the Torrey Botanical Club. He expects to sail about the first of June for Buenos Ayres, with the purpose of exploring and collecting in the great water system which empties into the Atlantic through the Parana and the Rio de la Plata, and afterward of crossing the Andes by the overland route into Chili. He also hopes to reach Lake Titicaca, in Peru, before returning. The great water systems of South America should be particularly attractive to a student of aquatics.

IN THE preliminary report which M. Viala has made to the French minister of agriculture upon his six months' stay in this country for the study of American grapes and grape culture, he devotes most space to the range of our native species and their hybrids growing in limestone regions, especially those of the more southern part of the country, and concludes that the most promising for use on the calcareous soils of France are Vitis Berlandieri, V. cinerea, and V. cordifolia. A more extended account of his studies here, including diseases of the grape and other topics, will be published after a time. He speaks warmly of the attention and assistance accorded him by Americans, and particularly by Commissioner Colman and Professor Scribner, of the U. S. Department of Agriculture.

"THE KEW OF THE EAST" is the designation of the Royal Botanic Garden at Calcutta. In the last annual report (1886-87), being for the 100th year of the garden's existence, a sketch of the history of the institution is given, which is also printed in the *Gardeners' Chronicle* (Feb. 18). Some notable names in botany appear among its directors, as, for instance, Dr. William Roxburgh, from 1793 to 1814, the father of Indian botany and the author of the Flora Indica; also, Dr. Nathaniel Wallich, from 1816 to 1846, well known for his explorations and extensive distribution of Indian plants; also, Mr. C. B. Clarke, acting director for a time, whose name is very familiar in connection with descriptions of Oriental plants. The present director, Dr. King, is credited with having transformed the garden and brought it up to its present high estate.

THE ACTION of frost on seedlings is the subject of some interesting experimental study. "In cold climates the annual period of growth is shortened, the season during which the plant must vegetate is condensed, and the shoots and flowers have to unfold rapidly in order to 'make hay while the sun shines.'"—*Gardeners' Chronicle*, Feb. 25. The following experiment will serve to indicate the work and its results: "Müller-Thurgau took ten potatoes, all alike, and of about the same size and weight. He placed five in an ice-cellar, and surrounded them with ice; the other five were kept in an ordinary house cellar. Those exposed to the freezing process yielded a large crop in three months after planting, while the others, planted at the same time, and in exactly the same way, soil, etc., had as yet only begun to show shoots, and bore no tubers." (l. c.)

THE PROPOSED government station for the study and testing of grasses which is projected as an adjunct to the botanical division of the Department of Agriculture is meeting with some opposition. The *Nation* (No. 1,185) contains a three-column argument to show that, while the idea is in itself good, the project is needlessly expensive and hopelessly imperfect. Better results might be accomplished, it believes, by special provision for such work at the various state experiment stations, thus costing less and at the same time giving the advantage of having the work done in the climate and region where the results are to have practical appli-

cation. Without entering into the discussion, it is safe to affirm that to distribute the proposed work to the state stations, while it has advantages in regard to climate, would, nevertheless, result in leaving the matter in about the same condition as it will be without congressional action.

THE FIRST FOUR numbers of *Garden and Forest*, the new horticultural journal, more than fulfill the promise of its announcement. The list of distinguished contributors is already a long one; it includes Mrs. Schuyler Van Rensselaer, on landscape gardening; Francis Parkman, B. E. Fernow, J. Hoopes, Robert Douglas, on forestry and tree growing; Peter Henderson, John Thorpe, William Falconer, A. H. Fewkes, on gardening and floriculture; a number of foreign contributers and the following well known botanists: Dr. Sereno Watson, Dr. W. G. Farlow, Dr. Wm. Trelease, Dr. W. J. Beal, Dr. G. L. Goodale, Prof. L. H. Bailey, Jr., A. A. Crozier and C. G. Pringle. The typography and printing, together with the character of the illustrations, far surpass any horticultural achievement of the kind before attempted in this country. The opening article is a tribute to the memory of Dr. Gray, and the second number has an admirable photogravure of the bronze medallion of Dr. Gray by A. St. Gaudens. There is also an account of the life of Dr. DeBary. The form and scope of the journal call to mind the *Gardeners' Chronicle* of England, and we can make no higher wish than that in stability and influence it may equal its esteemed contemporary across the water.

AN ILLUSTRATED WORK on the British Uredineæ and Ustilagineæ, by Charles B Plowright, F. L. S., is projected. It is to contain descriptions of all British species of these fungi, and also an account of their biology, including the methods of experimental culture. The work must prove of great service to students, especially as it is prepared by an authority so justly famous for the success of his experimental methods. The determination of the genetic connection between the forms of hetercecismal rusts is a fascinating study that can be carried on with simple appliances, and this book will be a boon to isolated botanists with inclinations toward original investigation. The publishers, Kegan Paul, Trench & Co., London, will begin the printing as soon as the requisite number of subscribers is obtained. Intending purchasers should at once send their names to the author (7 King St., King's Lynn, England). The price will be 7s 6d, or about $1.90, to subscribers, payable upon delivery, or 10s 6d, about $2.65, to non-subscribers.

A VERY appreciative editorial notice of Dr. Gray appears in *Gardeners' Chronicle* (Feb. 4), one or two passages from which we quote: "Apart from his scientific eminence, the clear-headed, genial character of the man endeared him to all with whom he came in contact. His vast knowledge, his untiring industry, his singleness of aim, his keen discrimination, his unselfish pursuit of science, his eminently judicial qualities, caused him to be respected even by those who exposed themselves to the sharp rapiers of his polished criticism." "No one on this side of the Atlantic thought of Asa Gray as an American cousin— he was here always a brother Englishman." "Asa Gray, as will be judged from his books and memoirs, was no dry-as-dust student of dried plants; their life-history and the working of their mechanism had a charm for him, and no man was happier than he in popularizing, in the best sense of the term, the discoveries of the science, and creating an interest in them among the general public." "America had no truer son than he; philosophy no more noble prophet. All honor to his memory, deep gratitude for his work and his example."